

Claims.

1. A device for forming an image on a screen comprising;

a coherent illumination means,

an electrically addressed spatial light modulator means located in the path of light from the coherent illumination means,

means for producing computer generated hologram images for display on the electrically addressed spatial light modulator means, and

optics to direct light diffracted by the electrically addressed spatial light modulator means to the screen,

wherein the computer generated image or images displayed by the electrically addressed spatial light modulator means result in a two dimensional image being formed at the screen.

2. A device according to claim 1 wherein the electrically addressed spatial light modulator means comprises a plurality of electrically addressed spatial light modulators.

3. A device according to any one of the preceding claims wherein the coherent illumination means illuminates the electrically addressed spatial light modulator means with red, green and blue light.

4. A device according to claim 3 wherein the electrically addressed spatial light modulator means is sequentially illuminated by the coherent illumination means with red, green and blue light

5. A device according to claim 3 wherein separate portions of the electrically addressed spatial light modulator means are simultaneously illuminated by the coherent illumination means with red, green and blue light.
6. A device according to any one of the preceding claims wherein the frame rate of the electrically addressed spatial light modulator means is greater than the frame rate of the two dimensional image formed at the screen.
7. A device according to any one of the preceding claims in which the means for producing computer generated hologram images comprises a store of a plurality of pre-calculated computer generated holographic elements.
8. A device according to any one of the preceding claims in which the means for producing computer generated hologram images is configured to produce computer generated hologram images for display on the electrically addressed spatial light modulator means that provide a regular array of pixels on the screen.
9. A device according to claim 8 wherein the array of pixels on the screen is subdivided into blocks and the image at the screen is formed by sequentially writing one or more blocks to the screen.
10. A device according to any one of the preceding claims wherein the coherent illumination means comprises at least one laser.
11. A device according to any one of the preceding claims wherein additional magnification optics are provided such that a magnified two dimensional image may be formed at the screen.
12. A method of forming a two dimensional image on a screen comprising the steps of;

i) illuminating an electrically addressed spatial light modulator means with coherent light,

ii) displaying a computer generated hologram image on the electrically addressed spatial light modulator means so as to diffract light therefrom, and

iii) using optics to direct light diffracted by the electrically addressed spatial light modulator means to a screen,

whereby the electrically addressed spatial light modulator means is arranged to display an image or images that produce a two dimensional image at the screen.

13. A device for forming a two dimensional image at a screen as substantially hereinbefore described with reference to figures 2 and 3.